

SEQUENCE LISTING

<110> Contreras, Roland
 Nelissen, Bart
 DeBacker, Marianne
 Luyten, Walter
 Viaene, Jasmine
 Logghe, Marc

<120> Drug Targets in Candida Albicans

<130> 53731/000

<140> JAB 1430-US

<141>

<150> 982204122.0

<151> 1998-12-04

<160> 22

<170> PatentIn Ver. 2.0

<210> 1

<211> 438

<212> DNA

<213> Candida albicans

<400> 1

```
aacagctggg cttctgctaa tacattcaac cctttccata tctatactcc aacaatatga 60
taactgatga acaattgaat accattgcat tgacatttgg ttttgcttca ataatatata 120
tcataatata tcatgccata tctactaatg tacataaatt agaagatgaa accccatcat 180
cttcattttac cagaacaaat actactgaaa ctactgttgc aagtaagaaa aagaagtaat 240
aactgatgga tttttcttcc taccaccaat tgaataatgc tagacttggt ggtgtgctac 300
aaatatttca aaagaaaata cgaatacttt ataaaatggg aagaacggaa gatgggtttct 360
catttatata ctaatacaca atcacatata catacacaaa cacaataata tacatacacc 420
tatatccctt tatttgat 438
```

<210> 2

<211> 1380

<212> DNA

<213> Candida albicans

<400> 2

```
atgttaaaaa cactaactca aactttacgc ttaactggga aagctttccc aaagggtccgt 60
ccggccttga tcagaacctc cgtgccttc gaccgttcta aacctcatgt caacattggg 120
actattgggc atgttgatca tggtaaaact acattgactg ctgctatcac caaagtttta 180
gccgaacaag gtggtgcca cttcttggat tatggttcta ttgatagagc tccagaagaa 240
agagctagag gtatcactat ttccactgcc caggttgaat acgaaaccaa gaacagacac 300
tatgcccacg ttgattgtcc aggacacgct gattatatca aaaatatgat tactggtgcc 360
gctcaaatgg atggtgctat cattgttggt gctgccactg atggtcaaag gcctcaaacc 420
agagaacatt tggtattggc cagacaagtt ggtgttcaag acttggttgt gtttgtcaac 480
aaagtgcata ctattgatga ccctgaaatg ttggaattag tgcgaaatgga aatgagagaa 540
ttgttatcca cctacggttt tgatggtgac aacactccag ttattatggg atctgcttta 600
atggccttgg aagacaagaa accagaaatt ggtaagggaag ctatcttgaa attgttagat 660
gctgtcgatg aacacattcc aactccatca agagacttgg aacaaccatt tttgttacca 720
gttgaagacg tgttctccat ctccggtaga ggaactgttg tctactggtag agttgaaaga 780
```

ggtgttttga	agaaggggtga	agaaatcgaa	attgttggtg	gttttgacaa	accttacaag	840
actactgtta	ccggtattga	aatgttcaaa	aaagaattag	actctgctat	ggctgggtgac	900
aactgtgggtg	ttttgttaag	aggtgttaaa	agagatgaaa	tcaagagagg	tatgggttttg	960
gccaaaccag	gtactgctac	ttctcacaag	aagttccttg	cttccttgta	tatttttgact	1020
tccgaagaag	gtgggtcgttc	cactccattt	ggtgaagggt	acaagcctca	atgcttcttc	1080
agaactaacg	atgtcactac	cacattttca	ttcccagaag	gagaagggtg	tgatcattct	1140
caaatgatca	tgccagggtga	caacattgaa	atggttgggtg	aattgatcaa	atcttggtcca	1200
ttagaagtca	accaacgttt	caacttgaga	gaagggtgga	aaactgttgg	tactgggtttg	1260
attaccagaa	tcatcgaata	aacagaatgt	gcactgtgaa	taataaaaag	aaaagaggta	1320
tatataggtg	actttgtatt	ttgtattgaa	caataaaaatt	ctgtaaatag	taagggcctc	1380

<210> 3

<211> 2283

<212> DNA

<213> Candida albicans

<400> 3

gaattcgccc	ttaagcactc	gtttcaacta	tacattcagt	aacaacaccc	ttaatttacc	60
aaactacatt	aatggaagta	acacaacgga	cgcagagtca	gacacaacca	acacaacagt	120
caccgacaac	tcagacgcaa	acccaaagca	aagaggacca	gaataggatt	tgtcaattga	180
tttgctccac	gggtcagttt	ggcaattatg	atttgaatat	caacgataaa	actatcgtac	240
aaggtaaaat	gacgtgggtat	tttgggaagag	accccaactc	agattttgcaa	gtggcgtcgt	300
cgtcgagaat	ttcaaacaag	cattttcaaa	tctgggtcaa	cttcaatgat	aaatcactat	360
ggataaagga	cacttcaact	aacgggacac	accttaacaa	cagtcgattg	gtgaaaggat	420
caaaactacct	tcttaatcag	ggtgatgaaa	tagcagtagg	ggttggtaga	gacgaggacg	480
ttgtgagggt	tgctggttgc	tttgggtgaca	aatacaaccc	ggcaaaagcta	cctgattcga	540
ccaacacaaat	taaagatgaa	ggaatataca	aagactttat	tgtgaaaaat	gaaacgatag	600
gccaaggagc	atttgccact	gtgaaaaagg	cgattgaacg	atctacgggc	gagtcgtacg	660
cgggtgaagat	tataaatcga	agaaaagcat	taaataaccg	tgggtggaagt	gccatggcag	720
gagtggaaccg	tgaattgtcc	atatttagagc	ggctcaacca	cccaaataata	gttgctctaa	780
aagcttttta	tgaagatatg	gacaattact	atattgtgat	ggaattgggtg	ccgggcggtg	840
atttgatgga	ctttgtgggt	gcaaacgggtg	caataggaga	agacgcaaca	caagtgatca	900
cgaaacagat	tctagaagga	attgcctatg	ttcataattt	aggaatctcc	catcgtgatt	960
tgaagccaga	taatatatttg	attatgcaag	atgacccaat	acttgttaaa	atcaccgact	1020
ttggattggc	aaaattcagt	gacaatctga	cgtttatgaa	aactttttgt	ggtacatttg	1080
cgtatgttgc	tcccgaagtt	atcacccgta	agtatggatc	atcgagatg	gaactgcaac	1140
aaaaggacaa	ctactcttcc	ttgggtgaca	tttgggtctt	gggatgtttg	gtttatgtac	1200
tttttaacttc	tcatttacca	ttcaacggga	aaaaccagca	acaaatgttt	gccaagatca	1260
aaaggggcga	atttcatgag	gtccatttaa	attcatacga	catttctgaa	gacggaagag	1320
atttcttgca	gtgctgccta	caggttaatc	ctaaactaag	gatgacggct	gctgaagctt	1380
tgaaacataa	atgggttgcaa	gacttgatat	aagaggattc	tgtcaaataca	ttgagtttat	1440
cgcaatcaca	gtcgcaacaa	tctcgaaaga	tagataatgg	tatccatatc	gaatcattga	1500
gcaaaattga	tgaagacgtt	atgcttcgtc	cattggatag	cgaaagaaat	aggaaatcaa	1560
gtaaacagca	agattttcaag	gtacccaagc	gtgtgattcc	gttatctcaa	catcctgcaa	1620
caccgttacc	aatgtcacia	ccgaaaaaga	ggccgtatca	aatagaccct	agaacaaaaca	1680
aaaaagtcga	tttgggaaga	cctctgacaa	gcaagaaagt	caagctaagt	gattccggtg	1740
ttgcggaaga	ctacttgaag	ttggggccac	ttgcaaattc	gttattccaa	gaaacaataa	1800
atatttcaaa	gtccccgttt	tctttcgga	gaaatgacac	ttgtgattgc	gagatagacg	1860
acgacagact	atccaaactt	cattgtgtca	ttaccaaaaga	aaacgactct	atatggttat	1920
tggataagag	tactaactcg	tgcttggtca	acaactactag	tgttggaataa	ggcaacaaag	1980
ttttgcttaag	aggaggggag	atattacatc	tcttctttga	cccattgtca	ctgcaacata	2040
taggtttcaa	agtagtcctt	gttgatcaac	tgtctgggtga	acataagagt	caagtggagg	2100
ttttgaaaca	aacctcagaa	gaaatgaata	ttattccact	tatttctggt	ttaaagtagta	2160
taagttcata	gatttagcat	atatacaagc	atttcctata	gaaacaaagg	ttcattaatt	2220
tagttattta	cctccatgca	attacattta	cttcttcttc	caagggcgaa	ttctgcagat	2280
atc						2283

<210> 4
 <211> 826
 <212> DNA
 <213> *Candida albicans*

<400> 4
 atgggtagta tgtgaagata caatattgaa agtggtttact agaatatcta agatgtttga 60
 gcccatggac attttttgat ttgataatta aaaaaagtag caatagatta ttgcgttgga 120
 gaaagaatca ccatagttgc aagattttgat agatgttaaa atgttcacgc aggcgaaaga 180
 tgtaacatct cttaaagtaa gaagaatatg gacatgaata aaaatagata gcactatttt 240
 ggaacttggt gaagatatta aaatagaatg ggattttcaac atagatattc aaagtaacga 300
 aacctcacaa tcaaataaaa acaacagtaa tactaacaat tcaattttta tttttataga 360
 gggacttcca tcttttaggt aacgtcacaa caaatctcac accttatgta acagatgtgg 420
 ccgtcgttca tccacgtcc aaaagaagac ctgttcttct tgtggttacc cagctgctaa 480
 aatgagatct cacaactggg ccttaaaagc caaaagaaga agaactactg gtaccggtag 540
 aatggcttac ttgaaacacg ttaccagaag attcaagaac gggtttccaaa ctggtgttgc 600
 taaagctcaa accccttccg cttaaaactaa ttactgaagt tattgggtcat gcattagtca 660
 ttattcatta aagtcattgt aagcatagca aaggaagaat tggttagatt cttgtttaaa 720
 atgtaatgac tatttaatat ctgttttaaat aagaggttta gtctttattt ttttacgtat 780
 acaccaaaaa aaaaagaagc aaataaaatc tgtatattaa tgttgg 826

<210> 5
 <211> 978
 <212> DNA
 <213> *Candida albicans*

<400> 5
 atgggtacta gtacaagtga agcattgaag aacatcaaaa acaaacagcg aagacagaaa 60
 gtttttgcag aaataaaaaca tgaaaagaat aaacaacgtc ataagcaaag agccgaaaga 120
 gctaaggaag aaagagaaaaa ccccgaaatta agagaggaaa gaatagcagc taatatccca 180
 gatactatag atagcaaacg tattttatgat gagactatag ctgctgaagt tgaaggagat 240
 gacgagtttc agtcataattt cactaacttg ttggaagaac caaagatttt gttgacaaca 300
 agtgccaatg ctaaaaaacc ggcctatgaa tttgcagaca tgatcatgga ctttttaccg 360
 aatgtgacat ttatcaaaaag gaagaaggaa tatacaatgc aagatatggc caaatattgc 420
 tcgaatagag acttcactgc attgcttgtc atcaacgaag acaagaagaa ggtcaatggg 480
 ataacgctca tcaatttacc tgaagggccca acattttatt tttcgattac atcaatagtt 540
 gatgggaaaa gaattaaggg acacgggaaa gctggtgatt atttacctga gattgtattg 600
 aataatttca attcaagatt gggtaaaact gtgggaagac tatttcaaag tattttccct 660
 cataaacctg aacttcaagg aagacaagtg attactttgc acaatcaacg tgattatatt 720
 tttttcagaa gacatagata tattttcaga aatgaggaaa aggttggtgatt gcagggaattg 780
 ggtccgcagt ttacattaaa gctaagaaga atgcaaaagg gagtacgtgg tgatgttggt 840
 tgggaacaca gaccagatat ggaaagagat aagaagaagt tttatttata agcgggtgta 900
 taaaggtagt agtagtgctt ttataagtat gtgtgtgtgt ttatgcatag atgtgtaaa 960
 agtaatacag ctaattcg 978

<210> 6
 <211> 619
 <212> DNA
 <213> *Candida albicans*

<220> DNA
 <221> n = any nucleotide

<400> 6
 aactaatttg tttaaacatc aataccaaga agttttttaca attcaatccc acatacacca 60
 ttaattatga attctgaaaa gattattgaa gttatcattg ctattttctt accaccagta 120
 gctgtgttta tgaaatgtgg tgccactacc ccattatgga ttaacttggt attatgtatc 180

tttatttggg	tccctgctat	cttacatgcc	ttatacgttg	tgttgaaaga	ttaaacaaac	240
accagagatt	tactgcttga	tgaattgatt	actccaaaga	gttgtgacta	gttcccagtg	300
tggttttttt	gccttccaac	tttcttttac	atthttccat	tactaccact	gtcttccccc	360
ctatthttgca	gagthttcaa	aatttatcca	aaacatgtta	gtcattaaac	catattatta	420
taattattct	tttttgtatt	tttttccctt	aaaacacgtt	aatttattaa	tcgtttcgtt	480
gthttgggtatt	ttattttttt	gtatttatca	attggaatat	atatctatac	atgaatttat	540
tatccattgt	accaattgtt	aaaacatttt	gttagtthtt	tgthtactagt	ataaaaannat	600
aataaaagtt	tanttcaac					619

<210> 7

<211> 2319

<212> DNA

<213> *Candida albicans*

<400> 7

atgacattag	ggthtcgataa	attcataagc	aagggtcagca	ctcatagacg	tcaatctgaa	60
ccatcaatct	tggaaatcgc	agccaccaat	tctcaaaaata	aatcgagaag	gctaagtatg	120
gataatgggc	attgtttatgt	tcgtgaatca	actaataatc	atcatcattt	aaataccgtc	180
gthtgataatt	tacgacagcg	tgcgggatcg	ttthtcattta	tttcacatca	ccataatcac	240
catcagaata	gtcacgataa	ttatactgtc	gatccccctta	catcaaacgg	agcacgaatt	300
tcccgatcac	gthtcacgttc	caaatcagtt	gggcacggag	aagcaatatc	accagcgtat	360
ttthtccaaga	ataaaaccaa	agattttagtg	aaacaggaaa	cagcacatat	cattctgaag	420
aaattactca	acatgtttaca	agattttggat	ttacaaaacc	ctattgcatt	gaaaacaata	480
tcacaagggt	cagaatcaaa	gtthttgtaaa	atctacgtgt	ctaactactaa	taattgtatt	540
tacttaccag	cagcaagttc	aacaagthtt	acttatgaag	atgatgaaaa	tggtcggtgt	600
ataattgctg	aagatagaaa	tgatgaaatg	ccaacagcag	ttaataacaa	tactthtgta	660
atggatagta	taaatcattc	agagactgat	ttcctggatt	ctccaccacc	tccagattta	720
ttthtctaaaa	tgaatcatt	ccattcacca	aattactttga	cttcaaaaat	cgattctgaa	780
tgtccaattc	cacatacatt	tgtgtgtgatt	gthtgaaataa	ccaaggactc	thtgattatt	840
aaagatcttc	attthccaatt	tcagtcatta	actaccattt	tatggccaac	tggtggatgca	900
tataatcgga	ctcatgcca	ggagaaattt	accattggga	atatggaatg	gcgtacatct	960
ttaagcgacg	ccgactatta	tatcaatagt	tctaattcca	acgatgttaa	gctgaaaaac	1020
thgggtcctg	aagatctttat	taatcgaact	agagaataca	aattaatcga	tattgaagaa	1080
ccaaacaatt	catcaaacag	thtactggat	gatgacatgg	atattaataa	tattacgtcg	1140
ccattatcaa	cgthcaccaac	atcaagthtca	actthcaacaa	attcaacctc	caactcattg	1200
ggthtcagatt	catataaaagc	tggtctthtat	gtattthttat	taccaatctt	attgccagaa	1260
catattcctg	ctthccattgt	thtctattaat	ggthtcattgg	ctcatacatt	actggttgaa	1320
tgcaataaat	atactgataa	gthtgaaatcg	aaatcaaaaag	tatcagcatc	gtacaattta	1380
cctatgggtcc	gtactccacc	aaacattggg	aattccattg	ctgataagcc	aatttatgtt	1440
aataggattt	ggaatgatgc	cgtacattat	attataactt	tcccccgcaa	atatgttact	1500
thgggttggtg	aacacatgat	aaatgtgaaa	thtactgcca	tggtgaaaga	tgtggttatc	1560
aagcgtatta	aatttaaatgt	attggagaga	ataacttatg	thtccaaaaa	thtatcacga	1620
gaatatgatt	atgatagtga	agacccttat	tgtattcatc	cagthttctaa	agaaaaataa	1680
gtacgtgaac	gtgttggtgtc	gthtatatgaa	thgaaaacga	aggcaaaaaca	atcttctggt	1740
ggacatcttg	aagcttataa	acaagaagtt	atgaaatgtc	cggaaaaataa	cctthttattt	1800
tcttgthtatg	aggttgaaaa	tgataataat	aacggcaacg	gcaacggcaa	cggcaacgga	1860
aacaagaacg	ttaaacaaaa	gaataaagat	caaccaatga	thgtctacacc	thtagatatc	1920
aatgthttctt	taccattthtt	aactactatg	tctgatagtt	taattatgac	atcagccata	1980
gaagaagaag	gthtcagatct	gcctcatata	tcaagaagag	ggthcggcagt	gagtatgact	2040
gataataata	ctaccccaa	taacaataac	cctthtatctc	cattthttggg	agcagtgga	2100
actaatgggtg	ctagtataaa	tgaaattggg	gatcatacat	tattccctga	thtctaatttt	2160
cgacatattg	aaattaaaca	tcgattacaa	gthtacattta	ggattthtctaa	accggatctg	2220
gataataaaa	tgcatcatta	tgaagtgggt	attgatacc	ccatcgthttt	acttagthtca	2280
aaatgtcaag	aagattctcc	thtctctttat	agthtctgta			2319

<210> 8

<211> 255

<212> DNA

<213> Candida albicans

<400> 8

```
aacgttcgtg caaaaggcta tactggtgat atccacgcag atgaagagca agtttaataca 60
actctttgtc aattaatgct gtacttgttt tcatttttatt tgctggcatt taaagaatac 120
ccatagttca gaaaataaaa ttgaaaaatt taaaaaaaaa cgcaatatca ttcatttttt 180
ttgttttttt gacaataata ttaatatgta gttaccaatg ttttttagatt ttatatgttt 240
tgaaaaaata gtttg 255
```

<210> 9

<211> 119

<212> DNA

<213> Candida albicans

<220> DNA

<221> n = any nucleotide

<400> 9

```
aaccttacaa tcattatacc aactatcaaa atcataagac tcttnaactt ctgtttttga 60
tagttggtat aatgatttat gtattatctt aattcattat tattagtttc ggtcacaaa 119
```

<210> 10

<211> 60

<212> PRT

<213> Candida albicans

<400> 10

```
Met Ile Thr Asp Glu Gln Leu Asn Thr Ile Ala Leu Thr Phe Gly Phe
  1             5             10             15
```

```
Ala Ser Ile Ile Leu Ile Ile Ile Tyr His Ala Ile Ser Thr Asn Val
      20             25             30
```

```
His Lys Leu Glu Asp Glu Thr Pro Ser Ser Ser Phe Thr Arg Thr Asn
      35             40             45
```

```
Thr Thr Glu Thr Thr Val Ala Ser Lys Lys Lys Lys
      50             55             60
```

<210> 11

<211> 426

<212> PRT

<213> Candida albicans

<400> 11

```
Met Leu Lys Thr Leu Thr Gln Thr Leu Arg Leu Thr Gly Lys Ala Phe
  1             5             10             15
```

```
Pro Lys Val Arg Pro Ala Leu Ile Arg Thr Tyr Ala Ala Phe Asp Arg
      20             25             30
```

```
Ser Lys Pro His Val Asn Ile Gly Thr Ile Gly His Val Asp His Gly
      35             40             45
```

```
Lys Thr Thr Leu Thr Ala Ala Ile Thr Lys Val Leu Ala Glu Gln Gly
```

50	55	60
Gly Ala Asn Phe Leu Asp Tyr Gly Ser Ile Asp Arg Ala Pro Glu Glu		
65	70	75 80
Arg Ala Arg Gly Ile Thr Ile Ser Thr Ala His Val Glu Tyr Glu Thr		
	85	90 95
Lys Asn Arg His Tyr Ala His Val Asp Cys Pro Gly His Ala Asp Tyr		
	100	105 110
Ile Lys Asn Met Ile Thr Gly Ala Ala Gln Met Asp Gly Ala Ile Ile		
	115	120 125
Val Val Ala Ala Thr Asp Gly Gln Met Pro Gln Thr Arg Glu His Leu		
	130	135 140
Leu Leu Ala Arg Gln Val Gly Val Gln Asp Leu Val Val Phe Val Asn		
	145	150 155 160
Lys Val Asp Thr Ile Asp Asp Pro Glu Met Leu Glu Leu Val Glu Met		
	165	170 175
Glu Met Arg Glu Leu Leu Ser Thr Tyr Gly Phe Asp Gly Asp Asn Thr		
	180	185 190
Pro Val Ile Met Gly Ser Ala Leu Met Ala Leu Glu Asp Lys Lys Pro		
	195	200 205
Glu Ile Gly Lys Glu Ala Ile Leu Lys Leu Leu Asp Ala Val Asp Glu		
	210	215 220
His Ile Pro Thr Pro Ser Arg Asp Leu Glu Gln Pro Phe Leu Leu Pro		
	225	230 235 240
Val Glu Asp Val Phe Ser Ile Ser Gly Arg Gly Thr Val Val Thr Gly		
	245	250 255
Arg Val Glu Arg Gly Val Leu Lys Lys Gly Glu Glu Ile Glu Ile Val		
	260	265 270
Gly Gly Phe Asp Lys Pro Tyr Lys Thr Thr Val Thr Gly Ile Glu Met		
	275	280 285
Phe Lys Lys Glu Leu Asp Ser Ala Met Ala Gly Asp Asn Cys Gly Val		
	290	295 300
Leu Leu Arg Gly Val Lys Arg Asp Glu Ile Lys Arg Gly Met Val Leu		
	305	310 315 320
Ala Lys Pro Gly Thr Ala Thr Ser His Lys Lys Phe Leu Ala Ser Leu		
	325	330 335
Tyr Ile Leu Thr Ser Glu Glu Gly Gly Arg Ser Thr Pro Phe Gly Glu		
	340	345 350
Gly Tyr Lys Pro Gln Cys Phe Phe Arg Thr Asn Asp Val Thr Thr Thr		

355	360	365
Phe Ser Phe Pro Glu Gly Glu Gly Val Asp His Ser Gln Met Ile Met		
370	375	380
Pro Gly Asp Asn Ile Glu Met Val Gly Glu Leu Ile Lys Ser Cys Pro		
385	390	395
Leu Glu Val Asn Gln Arg Phe Asn Leu Arg Glu Gly Gly Lys Thr Val		
405	410	415
Gly Thr Gly Leu Ile Thr Arg Ile Ile Glu		
420	425	

<210> 12

<211> 699

<212> PRT

<213> Candida albicans

<400> 12

Met Glu Val Thr Gln Arg Thr Gln Ser Gln Thr Gln Pro Thr Gln Gln		
1	5	10
Ser Pro Thr Thr Gln Thr Gln Thr Gln Ser Lys Glu Asp Gln Asn Arg		
20	25	30
Ile Cys Gln Leu Ile Cys Ser Thr Gly Gln Phe Gly Asn Tyr Asp Leu		
35	40	45
Asn Ile Asn Asp Lys Thr Ile Val Gln Gly Lys Met Thr Trp Tyr Phe		
50	55	60
Gly Arg Asp Pro Asn Ser Asp Leu Gln Val Ala Ser Ser Ser Arg Ile		
65	70	75
Ser Asn Lys His Phe Gln Ile Trp Leu Asn Phe Asn Asp Lys Ser Leu		
85	90	95
Trp Ile Lys Asp Thr Ser Thr Asn Gly Thr His Leu Asn Asn Ser Arg		
100	105	110
Leu Val Lys Gly Ser Asn Tyr Leu Leu Asn Gln Gly Asp Glu Ile Ala		
115	120	125
Val Gly Val Gly Arg Asp Glu Asp Val Val Arg Phe Val Val Val Phe		
130	135	140
Gly Asp Lys Tyr Asn Pro Ala Lys Leu Pro Asp Ser Thr Asn Thr Ile		
145	150	155
Lys Asp Glu Gly Ile Tyr Lys Asp Phe Ile Val Lys Asn Glu Thr Ile		
165	170	175
Gly Gln Gly Ala Phe Ala Thr Val Lys Lys Ala Ile Glu Arg Ser Thr		
180	185	190

Gly	Glu	Ser	Tyr	Ala	Val	Lys	Ile	Ile	Asn	Arg	Arg	Lys	Ala	Leu	Asn	
		195					200					205				
Thr	Gly	Gly	Gly	Ser	Ala	Met	Ala	Gly	Val	Asp	Arg	Glu	Leu	Ser	Ile	
	210					215				220						
Leu	Glu	Arg	Leu	Asn	His	Pro	Asn	Ile	Val	Ala	Leu	Lys	Ala	Phe	Tyr	
225					230					235					240	
Glu	Asp	Met	Asp	Asn	Tyr	Tyr	Ile	Val	Met	Glu	Leu	Val	Pro	Gly	Gly	
				245					250					255		
Asp	Leu	Met	Asp	Phe	Val	Ala	Ala	Asn	Gly	Ala	Ile	Gly	Glu	Asp	Ala	
		260						265					270			
Thr	Gln	Val	Ile	Thr	Lys	Gln	Ile	Leu	Glu	Gly	Ile	Ala	Tyr	Val	His	
	275						280					285				
Asn	Leu	Gly	Ile	Ser	His	Arg	Asp	Leu	Lys	Pro	Asp	Asn	Ile	Leu	Ile	
	290					295					300					
Met	Gln	Asp	Asp	Pro	Ile	Leu	Val	Lys	Ile	Thr	Asp	Phe	Gly	Leu	Ala	
305					310					315					320	
Lys	Phe	Ser	Asp	Asn	Ser	Thr	Phe	Met	Lys	Thr	Phe	Cys	Gly	Thr	Leu	
				325					330					335		
Ala	Tyr	Val	Ala	Pro	Glu	Val	Ile	Thr	Gly	Lys	Tyr	Gly	Ser	Ser	Gln	
		340						345					350			
Met	Glu	Ser	Gln	Gln	Lys	Asp	Asn	Tyr	Ser	Ser	Leu	Val	Asp	Ile	Trp	
	355						360					365				
Ser	Leu	Gly	Cys	Leu	Val	Tyr	Val	Leu	Leu	Thr	Ser	His	Leu	Pro	Phe	
	370					375					380					
Asn	Gly	Lys	Asn	Gln	Gln	Gln	Met	Phe	Ala	Lys	Ile	Lys	Arg	Gly	Glu	
385				390						395					400	
Phe	His	Glu	Ala	Pro	Leu	Asn	Ser	Tyr	Asp	Ile	Ser	Glu	Asp	Gly	Arg	
				405					410					415		
Asp	Phe	Leu	Gln	Cys	Cys	Leu	Gln	Val	Asn	Pro	Lys	Leu	Arg	Met	Thr	
			420					425					430			
Ala	Ala	Glu	Ala	Leu	Lys	His	Lys	Trp	Leu	Gln	Asp	Leu	Tyr	Glu	Glu	
	435						440					445				
Asp	Ser	Val	Lys	Ser	Leu	Ser	Leu	Ser	Gln	Ser	Gln	Ser	Gln	Gln	Ser	
	450				455						460					
Arg	Lys	Ile	Asp	Asn	Gly	Ile	His	Ile	Glu	Ser	Leu	Ser	Lys	Ile	Asp	
465				470						475					480	
Glu	Asp	Val	Met	Leu	Arg	Pro	Leu	Asp	Ser	Glu	Arg	Asn	Arg	Lys	Ser	
				485					490					495		

Ser Lys Gln Gln Asp Phe Lys Val Pro Lys Arg Val Ile Pro Leu Ser
 500 505 510
 Gln His Pro Ala Thr Pro Leu Pro Met Ser Gln Pro Lys Lys Arg Pro
 515 520 525
 Tyr Gln Ile Asp Pro Arg Thr Asn Lys Lys Val Asp Leu Glu Glu Pro
 530 535 540
 Ser Thr Ser Lys Lys Val Lys Leu Ser Asp Ser Val Val Ala Glu Asp
 545 550 555 560
 Tyr Leu Lys Leu Gly Pro Leu Ala Asn Ser Leu Phe Gln Glu Thr Ile
 565 570 575
 Asn Ile Ser Lys Ser Pro Phe Ser Phe Gly Arg Asn Asp Thr Cys Asp
 580 585 590
 Cys Glu Ile Asp Asp Asp Arg Leu Ser Lys Leu His Cys Val Ile Thr
 595 600 605
 Lys Glu Asn Asp Ser Ile Trp Leu Leu Asp Lys Ser Thr Asn Ser Cys
 610 615 620
 Leu Val Asn Asn Thr Ser Val Gly Lys Gly Asn Lys Val Leu Leu Arg
 625 630 635 640
 Gly Gly Glu Ile Leu His Leu Phe Phe Asp Pro Leu Ser Ser Gln His
 645 650 655
 Ile Gly Phe Lys Val Val Leu Val Asp Gln Ser Ser Gly Glu His Lys
 660 665 670
 Ser Gln Val Glu Val Leu Lys Gln Thr Ser Glu Glu Met Asn Ile Ile
 675 680 685
 Pro Leu Ile Ser Gly Leu Ser Ser Ile Ser Ser
 690 695

 <210> 13
 <211> 295
 <212> PRT
 <213> Candida albicans

 <400> 13
 Met Gly Thr Ser Thr Ser Glu Ala Leu Lys Asn Ile Lys Asn Lys Gln
 1 5 10 15
 Arg Arg Gln Lys Val Phe Ala Glu Ile Lys His Glu Lys Asn Lys Gln
 20 25 30
 Arg His Lys Gln Arg Ala Glu Arg Ala Lys Glu Glu Arg Glu Asn Pro
 35 40 45
 Glu Leu Arg Glu Glu Arg Ile Ala Ala Asn Ile Pro Asp Thr Ile Asp
 50 55 60

Ser Lys Arg Ile Tyr Asp Glu Thr Ile Ala Ala Glu Val Glu Gly Asp
 65 70 75 80
 Asp Glu Phe Gln Ser Tyr Phe Thr Asn Leu Leu Glu Glu Pro Lys Ile
 85 90 95
 Leu Leu Thr Thr Ser Ala Asn Ala Lys Lys Pro Ala Tyr Glu Phe Ala
 100 105 110
 Asp Met Ile Met Asp Phe Leu Pro Asn Val Thr Phe Ile Lys Arg Lys
 115 120 125
 Lys Glu Tyr Thr Met Gln Asp Met Ala Lys Tyr Cys Ser Asn Arg Asp
 130 135 140
 Phe Thr Ala Leu Leu Val Ile Asn Glu Asp Lys Lys Lys Val Asn Gly
 145 150 155 160
 Ile Thr Leu Ile Asn Leu Pro Glu Gly Pro Thr Phe Tyr Phe Ser Ile
 165 170 175
 Thr Ser Ile Val Asp Gly Lys Arg Ile Lys Gly His Gly Lys Ala Gly
 180 185 190
 Asp Tyr Leu Pro Glu Ile Val Leu Asn Asn Phe Asn Ser Arg Leu Gly
 195 200 205
 Lys Thr Val Gly Arg Leu Phe Gln Ser Ile Phe Pro His Lys Pro Glu
 210 215 220
 Leu Gln Gly Arg Gln Val Ile Thr Leu His Asn Gln Arg Asp Tyr Ile
 225 230 235 240
 Phe Phe Arg Arg His Arg Tyr Ile Phe Arg Asn Glu Glu Lys Val Gly
 245 250 255
 Leu Gln Glu Gly Pro Gln Phe Thr Leu Lys Leu Arg Arg Met Gln Lys
 260 265 270
 Gly Val Arg Gly Asp Val Val Trp Glu His Arg Pro Asp Met Glu Arg
 275 280 285
 Asp Lys Lys Lys Phe Tyr Leu
 290 295

<210> 14

<211> 55

<212> PRT

<213> Candida albicans

<400> 14

Met Asn Ser Glu Lys Ile Ile Glu Val Ile Ile Ala Ile Phe Leu Pro
 1 5 10 15

Pro Val Ala Val Phe Met Lys Cys Gly Ala Thr Thr Pro Leu Trp Ile

	20		25		30										
Asn	Leu	Val	Leu	Cys	Ile	Phe	Ile	Trp	Phe	Pro	Ala	Ile	Leu	His	Ala
	35						40					45			
Leu	Tyr	Val	Val	Leu	Lys	Asp									
	50					55									
<210> 15															
<211> 773															
<212> PRT															
<213> Candida albicans															
<400> 15															
Met	Thr	Leu	Gly	Phe	Asp	Lys	Phe	Ile	Ser	Lys	Val	Ser	Thr	His	Arg
1				5					10					15	
Arg	Gln	Ser	Glu	Pro	Ser	Ile	Leu	Glu	Ile	Ala	Ala	Thr	Asn	Ser	Gln
			20					25					30		
Asn	Lys	Ser	Arg	Arg	Leu	Ser	Met	Asp	Asn	Gly	His	Cys	Tyr	Val	Arg
	35						40					45			
Glu	Ser	Thr	Asn	Asn	His	His	His	Leu	Asn	Thr	Val	Val	Asp	Asn	Leu
	50					55					60				
Arg	Gln	Arg	Ala	Gly	Ser	Phe	Ser	Phe	Ile	Ser	His	His	His	Asn	His
65					70					75					80
His	Gln	Asn	Ser	His	Asp	Asn	Tyr	Thr	Val	Asp	Pro	Leu	Thr	Ser	Asn
				85					90					95	
Gly	Ala	Arg	Ile	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Lys	Ser	Val	Gly	His
			100					105					110		
Gly	Glu	Ala	Ile	Ser	Pro	Ala	Tyr	Phe	Ser	Lys	Asn	Lys	Thr	Lys	Asp
	115						120					125			
Leu	Val	Lys	Gln	Glu	Thr	Ala	His	Ile	Ile	Ser	Lys	Lys	Leu	Leu	Asn
	130					135					140				
Met	Leu	Gln	Asp	Leu	Asp	Leu	Gln	Asn	Pro	Ile	Ala	Leu	Lys	Thr	Ile
145					150					155					160
Ser	Gln	Gly	Ser	Glu	Ser	Lys	Phe	Cys	Lys	Ile	Tyr	Val	Ser	Asn	Thr
			165						170					175	
Asn	Asn	Cys	Ile	Tyr	Leu	Pro	Ala	Ala	Ser	Ser	Thr	Ser	Phe	Thr	Tyr
			180					185					190		
Glu	Asp	Asp	Glu	Asn	Gly	Gly	Val	Ile	Ile	Ala	Glu	Asp	Arg	Asn	Asp
	195						200					205			
Glu	Met	Pro	Thr	Ala	Val	Asn	Asn	Asn	Thr	Leu	Ser	Met	Asp	Ser	Ile
	210					215					220				

Asn	His	Ser	Glu	Thr	Asp	Phe	Ser	Asp	Ser	Pro	Pro	Pro	Pro	Asp	Leu	
225					230					235					240	
Phe	Ser	Lys	Met	Lys	Ser	Phe	His	Ser	Pro	Asn	Tyr	Leu	Thr	Ser	Lys	
				245					250					255		
Ile	Asp	Ser	Glu	Cys	Pro	Ile	Pro	His	Thr	Phe	Ala	Val	Ile	Val	Glu	
			260					265					270			
Leu	Thr	Lys	Asp	Ser	Leu	Ile	Ile	Lys	Asp	Leu	His	Phe	Gln	Phe	Gln	
		275					280					285				
Ser	Leu	Thr	Thr	Ile	Leu	Trp	Pro	Thr	Gly	Asp	Ala	Tyr	Asn	Arg	Thr	
	290					295					300					
His	Ala	Lys	Glu	Lys	Phe	Thr	Ile	Gly	Asn	Met	Glu	Trp	Arg	Thr	Ser	
305					310					315					320	
Leu	Ser	Asp	Ala	Asp	Tyr	Tyr	Ile	Asn	Ser	Ser	Asn	Ser	Asn	Asp	Val	
			325						330					335		
Lys	Ser	Lys	Asn	Leu	Gly	Pro	Glu	Asp	Leu	Ile	Asn	Arg	Thr	Arg	Glu	
			340					345					350			
Tyr	Lys	Leu	Ile	Asp	Ile	Glu	Glu	Pro	Asn	Asn	Ser	Ser	Asn	Ser	Leu	
	355					360						365				
Ser	Asp	Asp	Asp	Met	Asp	Ile	Asn	Asn	Ile	Thr	Ser	Pro	Leu	Ser	Thr	
	370					375					380					
Ser	Pro	Thr	Ser	Ser	Ser	Thr	Ser	Thr	Asn	Ser	Thr	Ser	Asn	Ser	Leu	
385					390					395					400	
Gly	Ser	Asp	Ser	Tyr	Lys	Ala	Gly	Leu	Tyr	Val	Phe	Leu	Leu	Pro	Ile	
			405					410						415		
Leu	Leu	Pro	Glu	His	Ile	Pro	Ala	Ser	Ile	Val	Ser	Ile	Asn	Gly	Ser	
		420					425						430			
Leu	Ala	His	Thr	Leu	Ser	Val	Glu	Cys	Asn	Lys	Tyr	Thr	Asp	Lys	Leu	
	435						440					445				
Asn	Arg	Lys	Ser	Lys	Val	Ser	Ala	Ser	Tyr	Asn	Leu	Pro	Met	Val	Arg	
	450					455					460					
Thr	Pro	Pro	Asn	Ile	Gly	Asn	Ser	Ile	Ala	Asp	Lys	Pro	Ile	Tyr	Val	
465				470					475					480		
Asn	Arg	Ile	Trp	Asn	Asp	Ala	Val	His	Tyr	Ile	Ile	Thr	Phe	Pro	Arg	
			485					490						495		
Lys	Tyr	Val	Thr	Leu	Gly	Cys	Glu	His	Met	Ile	Asn	Val	Lys	Leu	Ser	
		500						505					510			
Pro	Met	Val	Lys	Asp	Val	Val	Ile	Lys	Arg	Ile	Lys	Phe	Asn	Val	Leu	
	515						520					525				

Glu Arg Ile Thr Tyr Val Ser Lys Asn Leu Ser Arg Glu Tyr Asp Tyr
 530 535 540
 Asp Ser Glu Asp Pro Tyr Cys Ile His Pro Val Ser Lys Glu Asn Lys
 545 550 555 560
 Val Arg Glu Arg Val Val Ser Leu Tyr Glu Leu Lys Thr Lys Ala Lys
 565 570 575
 Gln Ser Ser Gly Gly His Leu Glu Ala Tyr Lys Gln Glu Val Met Lys
 580 585 590
 Cys Pro Glu Asn Asn Leu Leu Phe Ser Cys Tyr Glu Val Glu Asn Asp
 595 600 605
 Asn Asn Asn Gly Asn Gly Asn Gly Asn Gly Asn Gly Asn Lys Asn Val
 610 615 620
 Lys Gln Lys Asn Lys Asp Gln Pro Met Ile Ala Thr Pro Leu Asp Ile
 625 630 635 640
 Asn Val Ser Leu Pro Phe Leu Thr Thr Met Ser Asp Ser Leu Ile Met
 645 650 655
 Thr Ser Ala Ile Glu Glu Glu Gly Ser Asp Ser Pro His Thr Ser Arg
 660 665 670
 Arg Gly Ser Ala Val Ser Met Thr Asp Asn Asn Thr Thr Pro Ser Asn
 675 680 685
 Asn Asn Pro Leu Ser Pro Phe Leu Gly Ala Val Glu Thr Asn Gly Ala
 690 695 700
 Ser Ile Asn Glu Ile Gly Asp His Thr Leu Phe Pro Asp Ser Asn Phe
 705 710 715 720
 Arg His Ile Glu Ile Lys His Arg Leu Gln Val Thr Phe Arg Ile Ser
 725 730 735
 Lys Pro Asp Ser Asp Asn Lys Met His His Tyr Glu Val Val Ile Asp
 740 745 750
 Thr Pro Ile Val Leu Leu Ser Ser Lys Cys Gln Glu Asp Ser Pro Pro
 755 760 765
 Pro Tyr Ser Ser Val
 770

<210> 16

<211> 90

<212> PRT

<213> Candida albicans

<400> 16

Met Gly Glu Gly Thr Pro Ser Leu Gly Lys Arg His Asn Lys Ser His
 1 5 10 15

Thr	Leu	Cys	Asn	Arg	Cys	Gly	Arg	Arg	Ser	Phe	His	Val	Gln	Lys	Lys
			20					25					30		
Thr	Cys	Ser	Ser	Cys	Gly	Tyr	Pro	Ala	Ala	Lys	Met	Arg	Ser	His	Asn
		35					40					45			
Trp	Ala	Leu	Lys	Ala	Lys	Arg	Arg	Arg	Thr	Thr	Gly	Thr	Gly	Arg	Met
	50					55					60				
Ala	Tyr	Leu	Lys	His	Val	Thr	Arg	Arg	Phe	Lys	Asn	Gly	Phe	Gln	Thr
65					70					75					80
Gly	Val	Ala	Lys	Ala	Gln	Thr	Pro	Ser	Ala						
				85					90						

<210> 17
 <211> 19
 <212> DNA
 <213> artificial sequence

<220>
 <223> Description of Artificial Sequence:primer

<400> 17
 tgcagctcga cctcgactg 19

<210> 18
 <211> 19
 <212> DNA
 <213> artificial sequence

<220>
 <223> Description of Artificial Sequence:primer

<400> 18
 gcgtgaatgt aagcgtgac 19

<210> 19
 <211> 20
 <212> DNA
 <213> artificial sequence
 <220>
 <223> Description of Artificial Sequence:primer

<400> 19
 tgagcagctc gccgtcgcgc 20

<210> 20
 <211> 22
 <212> DNA
 <213> artificial sequence

<220>
 <223> Description of Artificial Sequence:primer
 <400> 20
 gagttataacc ctgcagctcg ac 22
 <210> 21
 <211> 6671
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:DNA plasmid

<400> 21
 ttccatcgagg gaaagtgggg gggaaaaaat ttttaagcagt tcacaaaacc ttccaaaaaa 60
 tatatggaca aagatgattg ttttttcccg acacaaaaat cataattaat tatgagaaag 120
 ttaaagttaa cgttacaatt tatgtttatt tgaagggtgaa aagcgattta tgatttttcc 180
 gaaatgaaaa ttttttttag gtttattttt tttgtcgggc aaagaaaaac tgaacaagga 240
 ttattaaaaat ttttggtggt tgtttgtgtc tggagaattc attcctctct catcttcaca 300
 caatgttttag acatctgaca cgattcatga tagttcgggt tccgggggtg gtgttttagtt 360
 ttctgttttcc ttttttttgg gaaagaatgt tttagctcat tgggttttctt tcttcattca 420
 atagttttga aagaatttgc ccacttggtt ttacaatcat ataaaattaa actttgatata 480
 aaaatagagt ttgaaagtgt ccagatcct ttttgatttc tttgtaaatt tttttttctc 540
 ccacatatac acacatacaa accgattttt ataagaaaga gttataccct gcagctcgac 600
 ctogactggt taaacctgca ggcattgcaag cttggccaaa aaggcctcga ggaacatgac 660
 caacaagtgt ctctcccaa ttgtctctct gttgtgtctc tccactacag ctctttccat 720
 gagctacaac ttgcttggtat tctacaaaag aagcagcaat tttcagtgtc agaagctcct 780
 gtggcaattg aatgggaggc ttgaatactg cctcaaggac aggatgaact ttgacatccc 840
 tgaggagatt aagcagctgc agcagttcca gaaggaggac gccgcattga ccatctatga 900
 gatgtctccag aacatctttg ctattttcag acaagattca tctagcactg gctggaatga 960
 gactattggt gagaacctcc tggctaattgt ctatcatcag ataaaccatc tgaagacagt 1020
 cctggaagaa aaactggaga aagaagattt caccagggga aaactcatga gcagtctgca 1080
 cctgaaaaga tattatggga ggattctgca ttacctgaag gccaaaggag acagtcactg 1140
 tgcttggaac atagtcagag tggaaatcct aaggaaactt tacttcatta acagacttac 1200
 aggttacctc cgaaactgaa gatctcctag cctgtgcctc tgggactgga caattgcttc 1260
 aagcattctt caaccagcag atgtgtgtta agtgactgat ggctaagtga ctgcatatga 1320
 aaggacacta gaagattttg aaatttttat taaattatga gttattttta tttattttaa 1380
 ttttattttg gaaaataaat ttttttgggt gcaaaagtcc ctcgaggcct agcgggccgc 1440
 tagaggatcc ccgggcgcta ggcggccgct aggccttttt ggccgaattc gagctcggta 1500
 ccgggggaga tccgtccccc ttttcctttg tcatatcat gtaattagtt atgtcacgct 1560
 tacattcacg cctccccc acatccgctc taaccgaaaa ggaaggagtt agacaacctg 1620
 aagtctaggt ccctatttat ttttttatag ttatgttagt attaagaacg ttatttatat 1680
 ttcaaatttt tctttttttt ctgtacagac gcgtgtacgc atgtaacatt atactgaaaa 1740
 ccttgcttga gaagggtttg ggacgctcga aggttttaatt ttgcaagcta gcttggcgta 1800
 atcatggtca tagctgtttc ctgtgtgaaa ttgttatccg ctcaaatc cacacaacat 1860
 acgagccgga agcataaagt gtaaaagcctg ggggtgcctaa tgagttagct aactcacatt 1920
 aattgctgtg cgtcactgc ccgtttcca gtccgggaaac ctgtcgtgcc agagatctct 1980
 gcattaatga atcgcccaac gcgcggggag aggcgggttt cgtattgggc gctcttccgc 2040
 ttctcgtctc actgactcgc tgcgtcgtgt cgttcggctg cggcgagcgg tatcagatcg 2100
 atctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg caggaaagaa 2160
 catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgctg tgctggcggt 2220
 tttccatagg ctccgcccc ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg 2280
 gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct ccctcgtgcg 2340
 ctctcctggt ccgacctgc cgtttaccgg atacctgtcc gcctttctcc cttcgggaag 2400
 cgtggcgctt tctcatagct cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc 2460

caagctgggc	tgtgtgcacg	aaccccccg	tcagcccgac	cgctgcgcct	tatccggtaa	2520
ctatcgtctt	gagtccaacc	cggtaagaca	cgacttatcg	ccactggcag	cagccactgg	2580
taacaggatt	agcagagcga	ggtatgtagg	cggtgctaca	gagttcttga	agtgggtggc	2640
taactacggc	tacactagaa	ggacagtatt	tggatatctgc	gctctgctga	agccagttac	2700
cttcggaaaa	agagttggta	gctcttgatc	cggcaaaaaa	accaccgctg	gtagcgggtg	2760
tttttttggt	tgcaagcagc	agattacgcg	cagaaaaaaa	ggatctcaag	aagatccttt	2820
gatcttttct	acggggctctg	acgctcagtg	gaacgaaaaa	tcacgttaag	ggattttggt	2880
catgagatta	tcaaaaagga	tcttcacctt	gatcctttta	aattaaaaat	gaagttttta	2940
atcaatctaa	agaagtggat	ctaggaaaaa	ttaattttta	cttcaaaatt	tagttagatt	3000
agtatatatg	agtaaacttg	gtctgacagt	taccaatgct	taatcagtga	ggcacctatc	3060
tcagcgatct	gtctattttc	ttcatccata	gttgccctgac	tccccgctgt	gtagataact	3120
acgatacggg	agggcttacc	atctggcccc	agtgtctgcaa	tgataccgcg	agaccacgcg	3180
tcaccggctc	cagattttatc	agcaataaac	cagccagccg	gaaggggcga	gcgcagaagt	3240
ggctctgcaa	ctttatccgc	ctccatccag	tctattaatt	gttgccggga	agctagagta	3300
agtagttcgc	cagttaatag	tttgcgcaac	gttggttgcca	ttgctacagg	catcggtgtg	3360
tcacgctcgt	cgtttggtat	ggcttcattc	agctccgggt	cccaacgatc	aaggcgagtt	3420
acatgatccc	ccatgttggtg	caaaaaagcg	gttagctcct	tcggtcctcc	gatcgttggtc	3480
agaagtaagt	tggccgcagt	gttatcactc	atggttatgg	cagcactgca	taattctctt	3540
actgtcatgc	catccgtaag	atgcttttct	gtgactgggtg	agtactcaac	caagtcattc	3600
tgagaatagt	gtatgcggcg	accgagttgc	tcttgcccg	cgtcaatacg	ggataatacc	3660
gcgccacata	gcagaacttt	aaaagtgtct	atcattggaa	aacgttcttc	ggggcgaaaa	3720
ctctcaagga	tcttaccgct	gttgagatcc	agttcgatgt	aaccactctg	tgcacccaac	3780
tgatcttcag	catcttttac	tttcaccagc	gtttctgggt	gagcaaaaac	aggaaggcaa	3840
aatgccgcaa	aaaagggat	aagggcgaca	cggaaatgtt	gaataactcat	actcttcctt	3900
tttcaatatt	attgaagcat	ttatcaggg	tattgtctca	tgagcggata	catatttgaa	3960
tgtattttaga	aaaataaaca	aataggggtt	ccgcgcacat	ttccccgaaa	agtgccacct	4020
gacgtctaag	aaaccattat	tatcatgaca	ttaacctata	aaaataggcg	tatcacgagg	4080
ccctttcgtc	tcgcgcggtt	cgggtgatgac	ggtgaaaacc	tctgacacat	gcagctccc	4140
gagacgggtca	cagcttgtct	gtaagcggat	gccgggagca	gacaagccc	tcagggcgcg	4200
tcagcgggtg	ttggcgggtg	tcggggctgg	cttaactatg	cggcatcaga	gcagattgta	4260
ctgagagtgc	accatatcga	cgtctctcct	tatgcgactc	ctgcattagg	aagcagccca	4320
gtagtaggtt	gaggccgttg	agcaccgcg	ccgcaaggaa	tggtgcatgc	aaggagatgg	4380
cgcccaacag	tccccgggc	acggggcctg	ccaccatacc	cacgcgaaa	caagcactaa	4440
taggaattga	tttggtgggt	ataaacggaa	acaaaaaaa	gagctggtac	tactttcttt	4500
aaaattattt	tattatttga	ttttatttaa	tagtatatat	tatattttga	acgtagatta	4560
ttttgttgaa	agttgctgta	gtgccattga	ttcgtaaac	taattctgta	ttagtcattc	4620
ctcttggttg	atagtatcca	aaaaaacggc	tatttttttg	caatcttatt	tcctgcata	4680
tatacagata	acataatgaa	agaaaaaatc	tttttttttg	ttcttcaatg	atgatttcaa	4740
ccattctttt	aaacattgat	caattcctga	gcaacaacc	catacacact	ggtttatata	4800
ccgccccctt	tacagttgaa	gaaagaaata	gaaatagaaa	tagcaaacia	aagatatgac	4860
agtcaacact	aagacctata	gtgagagagc	agaaactcat	gcctcaccag	tagcacagcg	4920
attatttcga	ttaatggaac	tgaagaaaac	caatttatgt	gcatcaattg	acgttgatac	4980
cactaaggag	ttcctcgagt	taattgataa	attaggtcct	tatgtatgct	taatcaagac	5040
tcatattgat	ataatcaatg	atttttccta	tgaatccact	attgaaccat	tattagaact	5100
ttcacgtaaa	catcaattta	tgatttttga	agatagaaaa	tttgctgata	ttggtaatac	5160
cgtaaagaaa	caatatattg	gtggagttaa	taaaattagt	agttgggcag	atattacca	5220
tgtcatggt	gtcactggga	atggagtgg	tgaaggatta	aaacagggag	ctaaagaaac	5280
caccaccaac	caagagccaa	gagggttatt	gatgttagct	gaattatcat	cagtgggatc	5340
attagcatat	ggagaatatt	ctcaaaaaa	tgttgaaatt	gctaaatccg	ataaggaatt	5400
tgttattgga	tttattgccc	aacgtgatat	gggtggccaa	gaagaaggat	ttgattggct	5460
tattatgaca	cctggagttg	gattagatga	taaaggtgat	ggattaggac	aacaatatag	5520
aactgttgat	gaagttgtta	gcactggaac	tgatattatc	attgttggtg	gaggattggt	5580
tggtaaagga	agagatccag	atattgaagg	taaaagggtat	agaaatgctg	gttggaatgc	5640
ttatttgaaa	aagactggcc	aattataaat	gtgaaggggg	agattttcac	tttattagat	5700
ttgtatatat	gtagaataaa	taaataaata	agttaaataa	ataattaaat	aagggtggta	5760
attattacta	tttacaatca	aaggtggtcc	ttctagctgt	aatccgggca	gcgcaacgga	5820
acattcatca	gtgtaaaaat	ggaatcaata	aagccctgcg	ctcatgagcc	cgaagtggcg	5880


```

agcccgatct tccccatcgg tgatgtcggc gatataggcg ccagcaaccg cacctgtggc 5940
gccgcagcgc gcaggggtcag cctgaatacg cgtttaatga ccagcacagt cgtgatggca 6000
aggtcagaat agcccaagtc ggccgagggg cctgtacagt gaggaagat ctgatattga 6060
cgaagaggaa ccaatgtaac gttacactga agaaaacaca caataaacgg gaagaaacgg 6120
tgtaaaagtg tgaaaataat ttttgaatat catttccctt ggtttaattc caaacgaaac 6180
gtgttttttt tagagaatgg gaattcttat tggatgtcta gattgtttgt ttactccaga 6240
ctgtgcacaa aaacgtttgg atggatgatc agaagatatt tttaggctta gctctaaata 6300
taagaaatga tgcttgaaaa accagacaga aattgagttt caaaaattgg taatgtgagg 6360
tattagtcaa ctaaccaaata aacaatgcaa accggttgat acatttcatt ttgaaaataa 6420
tgaaactgga attggatgac cagcacacaa acacataaag taattatggg aattagaagc 6480
gaacatagag gagtacttgg ccacgaacag aatacaagtg ggaacactat tttctccatt 6540
gttttagttc tgtttttttg tcagcctagt tttgtgctat gtgtaaaaaa tattgccaaag 6600
aaaaaaagct tgttttgtgg ccagtgtccg aaaaaaattt tggggaatct tcggattaat 6660
ttatgttttc a
6671

```

<210> 22

<211> 7127

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:DNA plasmid

<400> 22

```

agcttgagta ttctatagtg tcacctaaat agcttggcgt aatcatggtc atagctgttt 60
cctgtgtgaa attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag 120
tgtaaagcct ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg 180
cccgttttcc agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg 240
gggagaggcg gtttgcgat tgggcgctct tccgcttcc tgcctcactga ctgcgtgcgc 300
tcggtcgttc ggctgcggcg agcgggtatca gctcactcaa aggcggtaat acggttatcc 360
acagaatacag gggataaacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg 420
aaccgtaaaa aggcgcgctt gctggcgttt ttccataggc tccgcccccc tgacgagcat 480
cacaaaaatc gacgctcaag tcagagggtg cgaaacccga caggactata aagataccag 540
gcgtttcccc ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga 600
tacctgtccg cttttctccc ttccggaagc gtggcgcttt ctcatagctc acgctgtagg 660
tatctcagtt cgggtgtaggt cgttcgctcc aagctgggct gtgtgcacga acccccgtt 720
cagcccgacc gctgcgcctt atccggtaac tategtcttg agtccaaccc ggtaagacac 780
gacttatcgc cactggcagc agccactggg aacaggatta gcagagcgag gtatgtaggc 840
gggtctacag agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt 900
ggatatctgc ctctgctgaa gccagttacc ttccgaaaaa gagttggtag ctcttgatcc 960
ggcaaacaaa ccaccgctgg tagcgggtgg tttttgttt gcaagcagca gattacgcgc 1020
agaaaaaaag gatctcaaga agatcctttg atcttttcta cgggggtctga cgctcagtgg 1080
aacgaaaact cacgttaagg gattttgggtc atgagattat caaaaaggat cttcacctag 1140
atccttttaa attaaaaatg aagtttttaa tcaatctaaa gtatatatga gtaaaacttg 1200
tctgacagtt accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt 1260
tcatccatag ttgcctgact ccccgctcgt tagataacta gaccacgct caccggctcc 1320
agatttatca gcaataaacc agccagccgg aagggccgag cgcagaagtg gtctgcaac 1380
ttttccgcc tccatccagt ctattaattg ttgccgggaa gctagagtaa gtagttcgcc 1440
agttaatatg ttgcgaacg ttggtgccat tgctacaggc atcgtggtgt cagctcgtc 1500
gtttggtatg gttcattca gctccggttc ccaacgatca aggcgagtta catgatcccc 1560
catgttgtgc aaaaaagcgg ttagctcctt cggtcctccg atcgttgtca gaagtaagtt 1620
ggccgcgagt ttatcactca tggttatggc agcactgcat aattctctta ctgtcatgcc 1680
atccgtaaga tgcttttctg tgactgggtg gtactcaacc aagtcattct gagaatagtg 1740
tatgcggcga ccgagttgct cttgcccggc gtcaatacgg gataataccg cgccacatag 1800
cagaacttta aaagtgtca tcattggaaa acgttcttcg gggcgaaaac tctcaaggat 1860
cttaccgctg ttgagatcca gttcgatgta acccactcgt gcacccaact gatcttcagc 1920

```

atcttttact	ttcaccagcg	tttctgggtg	agcaaaaaca	ggaaggcaaa	atgcçgcaaa	1980
aaaggggaata	agggcgacac	ggaaatgttg	aatactcata	ctcttccttt	ttcaatatta	2040
ttgaagcatt	tatcagggtt	attgtctcat	gagcggatag	atatttgaat	gtatttagaa	2100
aaataaacia	ataggggttc	cgcgcacatt	tccccgaaaa	gtgccacctg	acgtctaaga	2160
aaccattatt	atcatgacat	taacctataa	aaataggcgt	atcacgaggg	cctttcgtct	2220
cgcgcgtttc	ggatgatgac	gtgaaaacct	ctgacacatg	cagctcccgg	agacgggtcac	2280
agcttgtctg	taagcggatg	cggggagcag	acaagcccgt	cagggcgcggt	cagcgggtgt	2340
tggcgggtgt	cggggctggc	ttaactatgc	ggcatcagag	cagattgtac	tgagagtga	2400
ccatatgagg	tgtgaaatac	cgcacagatg	cgtaaggaga	aaataccgca	tcaggcgaaa	2460
ttgtaaacgt	taatatTTTT	ttaaaattcg	cgttaaatat	ttgttaaatac	agctcatttt	2520
ttaaaccaata	ggccgaaatc	ggcaaaaatcc	cttataaaatc	aaaagaatag	accgagatag	2580
gggtgagtg	tgttccagtt	tggaaacaaga	gtccactatt	aaagaacgtg	gactccaacg	2640
tcaaagggcg	aaaaaccgtc	tatcagggcg	atggcccact	acgtgaacca	tcacccaaat	2700
caagtttttt	gcggctcgagg	tgccgtaaag	ctctaatacg	gaaccctaaa	gggagcccc	2760
gatttagagc	ttgacgggga	aagccggcga	acgtggcgag	aaaggaagg	aagaaagcga	2820
aaggagcggg	cgctagggcg	ctggcaagtg	tagcgggtcac	gctgcgcgta	accaccacac	2880
ccgcgcgct	taatgcgcg	ctacagggcg	cgtccattcg	ccattcaggc	tgcgcaactg	2940
ttgggaagg	cgatcgggtg	gggcctcttc	gctattacgc	cagctggcga	aagggggatg	3000
tgttgcaagg	cgattaaagt	gggtaacgcc	agggttttcc	cagtcacgac	gttgtaaaac	3060
gacggccagt	gaattgtaat	acgactcact	atagggcgaa	ttggttttcc	aatgatgagc	3120
acttttaaag	ttctgctatg	tggcgcggta	ttatcccgtg	ttgacgcggg	gcaagagcaa	3180
ctcggctgcc	gcatacacta	ttctcagaat	gacttggttg	agtactaata	ggaattgatt	3240
tggatgggtat	aaacggaaac	aaaaaaaaga	gctgggtacta	ctttctttta	aattattttta	3300
ttatttgatt	ttatttaata	gtatatatta	tattttgaac	gtagattatt	ttgttgaaag	3360
ttgctgtagt	gccattgatt	cgtaacacta	attctgtatt	agtcattcct	cttgtttgat	3420
agtatccaaa	aaaacggcta	tttttttgca	atcttatttc	ctgcatatta	tacagataac	3480
ataatgaaag	aaaaaatctt	tttttttggt	cttcaatgat	gatttcaacc	attcttttta	3540
acattgatca	attcctgagc	aacaacccca	tacacactgg	tttatatacc	gcccctttta	3600
cagttgaaga	aagaaataga	aatagaaata	gcaaacaaaa	gatatgacag	tcaacactaa	3660
gacctatagt	gagagagcag	aaactcatgc	ctcaccagta	gcacagcgat	tatttcgatt	3720
aatggaactg	aagaaaacca	atttatgtgc	atcaattgac	gttgatacca	ctaaggaaat	3780
ccttgaatta	attgataaat	taggtcctta	tgtatgctta	atcaagactc	atattgatata	3840
aatcaatgat	ttttcctatg	aatccactat	tgaaccatta	ttagaacttt	cacgtaaaaca	3900
tcaatttatg	atttttgaag	atagaaaatt	tgtctgatatt	ggtaataaccg	taaagaaaca	3960
atatattggt	ggagtttata	aaattagtag	ttgggcagat	attaccaatg	ctcatgggtg	4020
cactgggaat	ggagtggttg	aaggattaaa	acagggagct	aaagaaacca	ccaccaacca	4080
agagccaaga	gggttattga	tgttagctga	attatcatca	gtgggatcat	tagcatatgg	4140
agaatattct	caaaaaactg	ttgaaattgc	taaatccgat	aaggaatttg	ttattggatt	4200
tattgccccaa	cgtgatatgg	gtggccaaga	agaaggattt	gattggctta	ttatgacacc	4260
tggagttgga	ttagatgata	aaggtgatgg	attaggacaa	caatatagaa	ctgttgatga	4320
agttgttagc	actggaactg	atattatcat	tgttggtaga	ggattgtttg	gtaaagggaag	4380
agatccagat	attgaaggta	aaaggatatag	aaatgctggt	tggaatgctt	atttgaaaaa	4440
gactggccaa	ttataaatgt	gaagggggag	attttcactt	tattagattt	gtatatatgt	4500
agaataaata	aataaataag	ttaaataaat	aattaaataa	gggtggtaat	tattactatt	4560
tacaatcaaa	ggtggtcctt	ctagctgtaa	tccgggcagc	gcaacggaac	attcatcagt	4620
gtaaaaatgg	aatcaataaa	gccctgcgca	gcgcgcagg	tcagcctgaa	tacgcgttta	4680
atgaccagca	cagtcgtgat	ggcaagggtca	gaatagccca	agtcggccga	ggggcctgta	4740
cagtgaaggga	agatctgata	ttgacgaaga	ggaaccaatg	taacgttaca	ctgaagaaaa	4800
cacataataa	acgggaagaa	acggtgtaaa	agtgtgaaaa	taatttttga	atatcatttc	4860
ccttgggttta	attccaaacg	aaacgtgtat	ttttttagag	aatgggaatt	cttattggat	4920
gtctagattg	tttgtttact	ccagactgtg	cacaaaaaacg	tttggtatgga	tgatcagaag	4980
atatttttag	gcttagctct	aaatataaga	aatgatgctt	gaaaatccag	acagaaattg	5040
agttttcaaaa	attggtaattg	tgagggtatta	gtcaactaac	caaataacaa	tgcaaaccgg	5100
ttgatacatt	tcatttttgaa	aataatgaaa	ctggaattgg	atgaccagca	cacaaacaca	5160
taaagtaatt	atgggaatta	gaagcgaaca	tagaggaata	ctttgccacg	aacagaatac	5220
aagtgggaac	acttttttct	ccattgtttt	agttctgttt	ttttgtcaaa	ctgggttttgt	5280
gctatgtgta	aaaaaatatt	gccaagaaaa	aaagcttggt	ttgtggccag	tgtccgaaaa	5340

aaatTTTggg	gaagcttcgg	attaatTTt	TTTTtattc	catcggggaa	agtggggggg	5400
aaaaaaaaatt	taagcagttc	ataaaacctt	ccaaaaaata	tatggacaga	gatgattgta	5460
TTTTcccgac	accaaaatca	taattaacta	tgagaaaatt	gaatgtaacg	ttacaattta	5520
TTTTtatttg	aagctgaaaa	gcgattttatg	atTTTccga	aatgaaaatt	TTTTttaggt	5580
ttatTTTTtt	tgTcgggcaa	agaaaaactg	aacaaggatt	attaaaattt	ttggTgTttg	5640
TTTgtgtctg	gagaattcat	tcctctctca	tcttcacaca	atgttttagac	atctgacacg	5700
attcaaaata	gttcggTTTTc	cggggTtggt	gttttagTTTT	cgtTTTTcgt	TTTTTTtggg	5760
aagaatgttt	tagctcattg	gtTTTTctttc	ttcattcaat	agTTTTgaaa	gaatttgccc	5820
actTgttatt	acaatcatat	aaaattaaac	TTTgatataa	aatagagttt	gaaagtTtcc	5880
cagatccTtt	ttgatttctt	tgtaattTTTt	TTTTctccca	catatacaca	catacaaacc	5940
gattTTTTata	agaaagagtt	ataccctgca	gctcgacctc	gagggatccg	ggccctctag	6000
atgcggccgc	taggcctcga	gggactTTTg	cacaaaaaat	aatttatttt	ccaaaaataa	6060
atttaaataa	ataaaaaata	ctcataattt	aataaaaaatt	tcaaaatctt	ctagtgtcct	6120
ttcatatgca	gtacattagc	catcagtcac	ttaaaccagca	tctgctgggt	gaagaatgct	6180
tgaagcaatt	gtccagtccc	agaggcacag	gctaggagat	cttcagtTtc	ggaggtaacc	6240
tgtaagtctg	ttaatgaagt	aaaagtTcct	taggattTcc	actctgacta	tggtccaggc	6300
acagtgactg	tactcctTgg	ccttcaggta	atgcagaatc	ctcccataat	atctTTTcag	6360
gtgcagactg	ctcatgagtt	ttccctTgg	gaaatctTct	ttctccagtt	ttctTccag	6420
gactgtcttc	agatggTTta	tctgatgata	gacattagcc	aggaggTtct	caacaatagt	6480
ctcattccag	ccagtgtctag	atgaatcttg	tctgaaaata	gcaaagatgt	tctggagcat	6540
ctcatagatg	gtcaatgcgg	cgtcctcctt	ctggaactgc	tgcagctgct	taatctcctc	6600
agggatgtca	aagtTcatcc	tgtccttgag	gcagtattca	agcctcccat	tcaattgcca	6660
caggagcttc	tgacactgaa	aattgctgct	tctttgtagg	aatccaagca	agttgtagct	6720
catggaaaga	gctgtagtg	agaagcacia	caggagagca	atttgaggga	gacacttggt	6780
ggTcatgttc	ctcgaggcct	TTTTggccag	ctggcgccctg	ctgcgcgacg	gcgagctgct	6840
caccaccag	gatccgtccc	cctTTTcctt	tgTcgatatc	atgtaattag	ttatgtcacg	6900
cttacattca	cgcctcccc	ccacatccgc	tctaaccgaa	aaggaaggag	ttagacaacc	6960
tgaagtctag	gtccctatTTt	atTTTTttat	agttatgtta	gtattaagaa	cgTTatttat	7020
atttcaaatt	TTTctTTTTt	ttctgtacag	acgcgtgtac	gcatgtaaca	ttatactgaa	7080
aaccttgctt	gagaaggTTt	tgggacgctc	gaaggctTTa	atttgca		7127